

Application No. 10/829,236
Amendment dated July 13, 2009
After Final Office Action of May 14, 2009

Docket No.: 1248-0717PUS1

AMENDMENTS TO THE CLAIMS

1. (Previously presented) A wireless communications apparatus, comprising:
a transmission circuit device including an antenna and a plurality of transmission active circuits,
wherein the plurality of transmission active circuits includes at least a transmission amplifier
circuit and a first transmission active circuit,

wherein:

the transmission circuit device is laid out so that a combined length of transmission lines
connecting circuit members, which includes at least a first circuit member and a second circuit
member, in a first block circuit between an output terminal of the transmission amplifier circuit
placed at an immediately-preceding-stage of the antenna and an input terminal of the antenna is
shorter than a combined length of transmission lines connecting between an input terminal of the
transmission amplifier circuit at the immediately-preceding-stage of the antenna and an output
terminal of the first transmission active circuit at a preceding-stage of the transmission amplifier
circuit at the immediately-preceding-stage of the antenna.

2. (Previously presented) A wireless communications apparatus, comprising:
a transmission circuit device including an antenna and a transmission active circuit block made
up of a plurality of active circuits wherein the plurality of active circuits includes at least a final-
stage transmission amplifier circuit and a next-to-last-stage transmission active circuit placed at
an immediately-preceding-stage of the final-stage transmission amplifier circuit,

wherein:

the transmission circuit device is laid out so that a combined length of transmission lines connecting circuit members, which includes at least a first circuit member and a second circuit member, in a first block circuit between an output terminal of the transmission active circuit block and an input terminal of the antenna is shorter than a combined length of transmission lines connecting between an input terminal of the final-stage transmission amplifier circuit and an output terminal of the next-to-last-stage transmission active circuit in the transmission active circuit block.

3. (Previously presented) The wireless communications apparatus as set forth in claim 1, wherein:

the transmission amplifier circuit is a power amplifier.

4. (Previously presented) The wireless communications apparatus as set forth in claim 2, wherein:

the transmission amplifier circuit is a power amplifier.

5. (Previously presented) A wireless communications apparatus, comprising:
a reception circuit device including an antenna and a plurality of reception active circuits,
wherein the plurality of reception active circuits includes at least a reception amplifier circuit and
a first reception active circuit,

wherein:

the reception circuit device is laid out so that a combined length of transmission lines connecting circuit members, which includes at least a first circuit member and a second circuit member, in a first block circuit between an output terminal of the antenna and an input terminal of the reception amplifier circuit placed at an immediately-following-stage of the antenna is shorter than a combined length of transmission lines connecting between an output terminal of the reception amplifier circuit at the immediately-following-stage of the antenna and an input terminal of the first reception active circuit at a following-stage of the reception amplifier circuit.

6. (Previously presented) A wireless communications apparatus, comprising:
a reception circuit device including an antenna and a reception active circuit block made up of a plurality of active circuits, wherein the plurality of active circuits includes at least a final-stage reception amplifier circuit and a second-stage reception active circuit placed at an immediately-following-stage of the first-stage reception amplifier circuit,

wherein:

the reception circuit device is laid out so that a combined length of transmission lines connecting circuit members, which includes at least a first circuit member, which include at least a first circuit member and a second circuit member, in a first block circuit between an output terminal of the antenna and an input terminal of the reception active circuit block is shorter than a combined length of transmission lines connecting between an output terminal of the first-stage reception amplifier circuit and an input terminal of the second-stage reception active circuit in the reception active circuit block.

7. (Previously presented) The wireless communications apparatus as set forth in claim 5, wherein:

the reception amplifier circuit is a low-noise amplifier.

8. (Previously presented) The wireless communications apparatus as set forth in claim 6, wherein:

the reception amplifier circuit is a low-noise amplifier.

9. (Previously presented) A wireless communications apparatus, comprising:
a transmission circuit device including an antenna and a plurality of transmission active circuits, wherein the plurality of transmission active circuits includes at least a transmission amplifier circuit and a first active circuit; and

a reception circuit device including the antenna and a plurality of reception active circuits, wherein the plurality of reception active circuits include at least a reception amplifier circuit and the first active circuit,

wherein:

the transmission circuit device is laid out so that a combined length of transmission lines connecting circuit members, which include at least a first circuit member and a second circuit member, in a first block circuit between an output terminal of the transmission amplifier circuit placed at an immediately-preceding-stage of the antenna and an input terminal of the antenna is shorter than a combined length of transmission lines connecting between an input terminal of

the transmission amplifier circuit at the immediately-preceding-stage of the antenna and an output terminal of the first active circuit at a preceding-stage of the transmission amplifier circuit; and

the reception circuit device is laid out so that a combined length of transmission lines connecting circuit members, which include at least the first circuit member and the second circuit member, in the first block circuit between an output terminal of the antenna and an input terminal of the reception amplifier circuit placed at an immediately-following-stage of the antenna is shorter than a combined length of transmission lines connecting between an output terminal of the reception amplifier circuit at the immediately-following-stage of the antenna and an input terminal of the first active circuit at a following-stage of the reception amplifier circuit.

10. (Previously presented) A wireless communications apparatus, comprising:

a transmission circuit device including an antenna and a transmission active circuit block made up of a plurality of active circuits, wherein the plurality of active circuits includes at least a final-stage transmission amplifier circuit and a next-to-last-stage transmission active circuit and a next-to-last-stage transmission active circuit placed at an immediately-preceding-stage of the final-stage transmission amplifier circuit; and

a reception circuit device including an antenna and a reception active circuit block made up of a plurality of active circuits, wherein the plurality of active circuits includes at least a first-stage reception amplifier circuit and a second-stage reception active circuit placed at an immediately-following-stage of the first-stage reception amplifier circuit,

wherein:

the transmission circuit device is laid out so that a combined length of transmission lines connecting circuit members, which include at least a first circuit member and a second circuit member, in a first block circuit between an output terminal the transmission active circuit block and an input terminal of the antenna is shorter than a combined length of transmission lines connecting between an input terminal of the final-stage transmission amplifier circuit and an output terminal of the next-to-last-stage transmission active circuit; and

the reception circuit device is laid out so that a combined length of transmission lines connecting circuit members, which include at least the first circuit member and the second circuit member, in the first block circuit between an output terminal of the antenna and an input terminal of the reception active circuit block is shorter than a combined length of transmission lines connection between an output terminal of the first-stage active circuit and an input terminal of the second-stage reception active circuit in the reception active circuit block.

11. (Previously presented) The wireless communications apparatus as set forth in claim 1, wherein,

the transmission circuit device is laid out so that a part or entire of the first block circuit from the transmission amplifier circuit at the immediately-preceding stage of the antenna to the antenna are formed on a substrate different from a substrate on which the first transmission active circuit at the preceding-stage of the transmission amplifier circuit at the immediately-preceding-stage of the antenna is formed.

12. (Previously presented) The wireless communications apparatus as set forth in claim 2, wherein,

the plurality of transmission active circuits further includes a second transmission active circuit at a preceding stage of the transmission active circuit block,

the transmission circuit device is laid out so that a part or entire of the first block circuit from the final-stage transmission amplifier circuit of the transmission active circuit block to the antenna is formed on a substrate different from a substrate on which the second transmission active circuit at the preceding-stage of the transmission active circuit block is formed.

13. (Currently amended) The wireless communications apparatus as set forth in claim 1, wherein,

the transmission circuit device is laid out so that a part or entire of the first block circuit ~~from~~ is formed as one circuit group different from a circuit group in which the first transmission active circuit is formed.

14. (Previously presented) The wireless communications apparatus as set forth in claim 2, wherein,

the plurality of transmission active circuits further includes a second transmission active circuit at a preceding stage of the transmission active circuit block,

the transmission circuit device is laid out so that a part or entire of the first block circuit is formed as one circuit group different from a circuit group in which the second transmission active circuit at preceding-stage of the transmission active circuit block is formed.

15. (Previously presented) The wireless communications apparatus as set forth in claim 5, wherein,

the reception circuit device is laid out so that a part or entire of the first block circuit is formed on a substrate different from a substrate on which the first reception active circuit is formed.

16. (Currently amended) The wireless communications apparatus as set forth in claim 6, wherein,

the plurality of ~~transmission~~-active circuits further includes a second reception ~~transmission~~-active circuit at a following stage of the reception active circuit block,

the reception circuit device is laid out so that a part or entire of the first block circuit is formed on a substrate different from a substrate on which the second reception active circuit is formed.

17. (Previously presented) The wireless communications apparatus as set forth in claim 5, wherein,

the reception circuit device is laid out so that a part or entire of the first block circuit is formed as one circuit group different from a circuit group in which the first reception active circuit at the following-stage of the reception amplifier active circuit at the immediately-following-stage of the antenna is formed.

18. (Currently amended) The wireless communications apparatus as set forth in claim 6, wherein,

the plurality of ~~transmission~~-active circuits further includes a second reception ~~transmission~~-active circuit at a following stage of the reception active circuit block,

the reception circuit device is laid out so that a part or entire of the first block circuit is formed as one circuit group different from a circuit group in which the second reception active circuit is formed.

19. (Previously presented) A wireless communications apparatus, comprising:
a transmission circuit device including an antenna and a plurality of transmission active circuits, wherein the plurality of transmission active circuits includes at least a transmission amplifier circuit, and a first transmission active circuit; and

a reception circuit device including the antenna and a plurality of reception active circuits, wherein the plurality of reception active circuits includes at least a reception amplifier circuit, and the first reception active circuit,

wherein:

the transmission circuit device is laid out so that a combined length of transmission lines connecting circuit members which include at least a first circuit member and a second circuit member, in a first block circuit between an output terminal of the transmission amplifier circuit placed at an immediately-preceding-stage of the antenna and an input terminal of the antenna is shorter than a combined length of transmission lines connecting between an input terminal of the transmission amplifier circuit and an output terminal of the first active circuit at a preceding-

stage of the transmission amplifier circuit; and a part or entire of the first block circuit is formed on a substrate different from a substrate on which the first active circuit is formed, and the reception circuit device is laid out so that a combined length of transmission lines connecting circuit members, which include at least the first circuit member and the second circuit member, in the first block circuit between an output terminal of the antenna and an input terminal of the reception amplifier circuit placed at an immediately-following-stage of the antenna is shorter than a combined length of transmission lines connecting between an output terminal of the reception amplifier circuit at the immediately-following-stage of the antenna and an input terminal of the first active circuit at a following-stage of the reception amplifier circuit at the immediately-following-stage of the antenna; and a part or entire of the first block circuit is formed on a substrate different from a substrate on which the first active circuit is formed.

20. (Canceled)

21. (Previously presented) A wireless communications apparatus, comprising:
a transmission circuit device including an antenna and a plurality of transmission active circuits, wherein the plurality of transmission active circuits includes at least a transmission amplifier circuit, and a first transmission active circuit; and

a reception circuit device including the antenna and a plurality of reception active circuits, wherein the plurality of reception active circuits includes at least a reception amplifier circuit, and the first reception active circuit,

wherein:

the transmission circuit device is laid out so that a combined length of transmission lines connecting circuit members, which include at least a first circuit member and a second circuit member, in a first block circuit between an output terminal of the transmission amplifier circuit placed at an immediately-preceding-stage of the antenna and an input terminal of the antenna is shorter than a combined length of transmission lines connecting between an input terminal of the transmission amplifier circuit at the immediately-preceding-stage of the antenna and an output terminal of the first active circuit at a preceding-stage of the transmission amplifier circuit; and a part or entire of the first block circuit from the transmission amplifier circuit at the immediately-preceding stage of the antenna to the antenna, which part or entire of the first block includes at least the first circuit member and the second circuit member is formed as one circuit group different from a circuit group in which the first active circuit at the preceding-stage of the transmission amplifier circuit at the immediately-preceding-stage of the antenna is formed, and the reception circuit device is laid out so that a combined length of transmission lines connecting circuit members, which include at least the first circuit member and the second circuit member, in the first block circuit between an output terminal of the antenna and an input terminal of the reception amplifier circuit placed at an immediately-following-stage of the antenna is shorter than a combined length of transmission lines connecting between an output terminal of the reception amplifier circuit at the immediately-following-stage of the antenna and an input terminal of the first active circuit at a following-stage of the reception amplifier circuit at the immediately-following-stage of the antenna; and a part or entire of the first block circuit from the antenna to the reception amplifier circuit at the immediately-following stage of the antenna are formed as one circuit block different from a circuit block in which the first active circuit at the

following-stage of the reception amplifier circuit at the immediately-following-stage of the antenna is formed.

22. (Canceled)

23. (Previously presented) The wireless communications apparatus as set forth in claim 1, wherein,

the first transmission active circuit is made up of either an intermediate frequency circuit or a modulation/demodulation circuit, and a wireless frequency input-output circuit which are provided on a single package or on a single chip.

24. (Canceled)

25. (Previously presented) The wireless communications apparatus as set forth in claim 5, wherein,

the first reception active circuit is made up of either an intermediate frequency circuit or a modulation/demodulation circuit, and a wireless frequency input-output circuit which are provided on a single package or on a single chip.

26. (Canceled)

27. (Previously presented) The wireless communications apparatus as set forth in claim 9, wherein,

the first active circuit s is made up of either an intermediate frequency circuit or a modulation/demodulation circuit, and a wireless frequency input-output circuit which are provided on a single package or on a single chip.

28. (Canceled)

29. (Original) The wireless communications apparatus as set forth in claim 1, wherein,

the antenna is a linear antenna.

30. (Original) The wireless communications apparatus as set forth in claim 2, wherein,

the antenna is a linear antenna.

31. (Original) The wireless communications apparatus as set forth in claim 5, wherein,

the antenna is a linear antenna.

32. (Original) The wireless communications apparatus as set forth in claim 6,
wherein,
the antenna is a linear antenna.

33. (Original) The wireless communications apparatus as set forth in claim 9,
wherein,
the antenna is a linear antenna.

34. (Original) The wireless communications apparatus as set forth in claim 10,
wherein,
the antenna is a linear antenna.

35. (Previously presented) The wireless communications apparatus as set forth in
claim 1, wherein,
the combined lengths of the transmission lines are represented by high-frequency
transmission loss.

36. (Previously presented) The wireless communications apparatus as set forth in
claim 2, wherein,
the combined lengths of the transmission lines are represented by high-frequency
transmission loss.

37. (Previously presented) The wireless communications apparatus as set forth in claim 5, wherein,

the combined lengths of the transmission lines are represented by high-frequency transmission loss.

38. (Previously presented) The wireless communications apparatus as set forth in claim 6, wherein,

the combined lengths of the transmission lines are represented by high-frequency transmission loss.

39. (Previously presented) The wireless communications apparatus as set forth in claim 9, wherein,

the combined lengths of the transmission lines are represented by high-frequency transmission loss.

40. (Previously presented) The wireless communications apparatus as set forth in claim 10, wherein,

the combined lengths of the transmission lines are represented by high-frequency transmission loss.

41. (Canceled)